

REMARKS

I. Introduction

With the addition of new claims 25 to 33, claims 7 to 13, 15 to 17, and 19 to 33 are currently pending in the present application. In view of the foregoing amendments and following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

Applicants thank the Examiner for considering the Information Disclosure Statements filed between October 28, 2010 and February 3, 2011 and cited references.

II. Amendment to Specification

In accordance with 37 C.F.R. § 1.57(g), the Specification has been amended herein to explicitly include a portion of DE 101 39 170, which was previously incorporated by reference. In accordance with 37 C.F.R. § 1.57(f), it is stated that the material being inserted is material previously incorporated by reference and the amendment contains no new matter.

III. Objection to Claim 23

Claim 23 has been amended herein without prejudice, thereby rendering moot the objection thereto. Withdrawal of the objection to claim 23 is therefore respectfully requested.

IV. Rejection of Claims 7 to 13, 15 to 17, and 19 to 24 Under 35 U.S.C. § 112

Claims 7 to 13, 15 to 17, and 19 to 24 were rejected under 35 U.S.C. § 112, ¶ 1, as assertedly failing to satisfy the written description requirement.

With respect to claims 7 and 23, while Applicants do not agree with the merits of the rejection, the claims have been amended herein without prejudice, thereby rendering moot the present rejection as applied to those claims.

With respect to claim 24, the Office Action asserts that the application as originally filed does not support the feature of “for each of at least one of the configurations, a plurality of instructions of the program are executable via a single instance of the respective configuration.” However, the present application incorporates by reference DE 101 39 170, which refers to partitioning an algorithm so that as much as possible is processed without reconfiguration, i.e., using the same configuration. (The specification has been amended herein without prejudice to explicitly include this portion of DE 101 39 170.) Thus, the

application as originally filed supports the feature of a configuration for which a plurality of instructions of a program are executable via a single instance of the respective configuration.

Claim 24 and its dependent claims 8 to 13, 15 to 17, and 19 to 22 are therefore supported by the application as originally filed, and comply with the written description requirements of 35 U.S.C. § 112, ¶ 1.

Withdrawal of this rejection under 35 U.S.C. § 112, ¶ 1 of claims 7 to 13, 15 to 17, and 19 to 24 is therefore respectfully requested.

V. Rejection of Claims 7, 10, 11, 15 to 17, and 19 to 24 Under 35 U.S.C. § 103(a)

Claims 7, 10, 11, 15 to 17, and 19 to 24 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 6,658,564 (“the Smith reference”), U.S. Patent No. 5,860,119 (“the Dockser reference”), and U.S. Patent No. 6,076,157 (“the Borkenhagen reference”) and Bondalapati et al., “Reconfigurable Meshes: Theory and Practice,” Reconfigurable Architectures Workshop, International Parallel Processing Symposium (April 1997) (“the Bondalapati reference”). It is respectfully submitted that the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references does not render unpatentable any of claims 7, 10, 11, 15 to 17, and 19 to 24, and the rejection should be withdrawn, for at least the following reasons.

Claim 7, as herein amended without prejudice, recites “configuring at least a subset of the data processing cells for execution . . . of an entire loop of a program . . . ; and responsive to determining in the monitoring step that the respective maximum allowed execution runtime [of the configuration] is exceeded, interrupting the execution of the loop prior to its completion, wherein the interrupting includes reconfiguring one or more of the at least the subset of the data processing cells.”

The Borkenhagen reference has nothing to do with configurations, and instead refers to a forced thread switch for a thread after some time. Thus, at most, the Borkenhagen reference refers to a maximum runtime for a thread; not for a configuration. Indeed, the Office Action refers to the Smith reference as assertedly disclosing a configuration, besides for threads. However, the mere mentioning in the Smith reference of a configuration and of a thread in no way suggests applying a maximum runtime to a configuration as with a thread in the Borkenhagen reference. Indeed, threads are parts of a program that can be executed independently of each other, for example, in parallel, whereas configurations are of the function and/or interconnection of reconfigurable processing cells, which can then be used in

their configurations for executing one or more parts of a program. Thus, there is no one-to-one correspondence of a thread to a configuration, and the reference to a forced thread switch after some time in the Borkenhagen reference in no way suggests a forced configuration switch after some time.

Moreover, the Smith reference does not suggest to apply the switching mechanism of the Borkenhagen reference to configurations. The Smith reference indicates that a function may be compiled into a software implementation and a hardware implementation, which may be alternatively selectable by an operating system at execution time depending on prevailing system demands. In other words, the configuration in the Smith reference is a hardware implementation of what would otherwise be a single software function, in its entirety, and is used instead of, and is the counterpart of, the software function.

At 8:66 - 9:4, the Smith reference merely suggests applying a time-multiplexing system to functions. Nowhere does the Smith reference suggest applying a time-multiplexing system to configurations. While the Smith reference may provide certain configurations of hardware that provide for operation in a manner that corresponds in its entirety to a function as a whole, the time-multiplexing is ultimately provided on a function-by-function basis, and not a configuration-by-configuration basis. For example, if a configuration is usable for multiple functions, then, while the time-multiplexing may provide for interrupting a particular function, the configuration may continue to be used without reconfiguration.

Therefore, at most, the Smith reference suggests that, where a configuration corresponds in its entirety to a single function, time-multiplexing may indirectly govern the operation of that configuration by virtue of the correspondence of the configuration to the function. However, nowhere does the Smith reference suggest that its time-multiplexing would apply on a configuration basis, particularly where a configuration corresponds to a program loop, as required by claim 7.

The other cited references do not correct this critical deficiency of Borkenhagen and Smith references. Thus, the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references does not disclose or suggest all of the features of claim 7, and therefore does not render unpatentable claim 7.

Claim 23 recites “modifying . . . a loop of a program . . . to generate a modified version of the program, wherein the modifying of the loop includes inserting into

the loop a maximum value condition that is based on a maximum allowed execution runtime of a configuration of at least a subset of the data processing cells.” The cited references do not disclose or suggest this feature. The combination of the Smith, Dockser, Borkenhagen, and Bondalapati references therefore does not disclose or suggest all of the features of claim 23, and does not render unpatentable claim 23.

Claim 24 recites “a plurality of instructions of the program are executable via a single instance of the respective configuration.” The Office Action refers to 11:59-63 and 13:33-34 of the Smith reference as assertedly disclosing this feature. As previously stated 13:33-34 merely states that a single programmable logic resource may be allocated to a single block of configuration data that makes up a given function. Additionally, 11:59-63 merely indicates that hardware functions can be compiled into configuration patterns. There is no indication whatsoever that such a function compiled into a single configuration may include more than one instruction. Indeed, none of the cited references disclose or suggest that multiple instructions are executed using a single instance of a configuration.

Therefore, the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references does not disclose or suggest all of the features of claim 24, and therefore does not render unpatentable claim 24 or any of its dependent claims 10, 11, 15 to 17, and 19 to 22.

Withdrawal of this obviousness rejection of claims 7, 10, 11, 15 to 17, and 19 to 24 is therefore respectfully requested.

VI. Rejection of Claims 8 and 9 Under 35 U.S.C. § 103(a)

Claims 8 and 9 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references in further view of U.S. Patent No. 5,941,977 (“the Panwar reference”). It is respectfully submitted that the combination of Smith, Dockser, Borkenhagen, Bondalapati, and Panwar references does not render unpatentable either of claims 8 and 9, and the rejection should be withdrawn, for at least the following reasons.

Claims 8 and 9 ultimately depend from claim 24 and are therefore allowable for at least the same reasons set forth above in support of the patentability of claim 24 since the Panwar reference does not cure the critical deficiencies noted above with respect to the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references.

Withdrawal of this obviousness rejection of claims 8 and 9 is therefore respectfully requested.

VII. Rejection of Claims 12 and 13 Under 35 U.S.C. § 103(a)

Claims 12 and 13 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references, in further view of U.S. Patent No. 4,041,462 (“the Davis reference”). It is respectfully submitted that the combination of the Smith, Dockser, Borkenhagen, Bondalapati, and Davis references does not render unpatentable either of claims 12 and 13, and the present rejection should be withdrawn, for at least the following reasons.

Claims 12 and 13 ultimately depend from claim 24 and are therefore allowable for at least the same reasons set forth above in support of the patentability of claim 24 since the Davis reference does not cure the critical deficiencies noted above with respect to the combination of the Smith, Dockser, Borkenhagen, and Bondalapati references.

Withdrawal of this obviousness rejection of claims 12 and 13 is therefore respectfully requested.

VIII. New Claims 25 to 33

Claims 25 to 33 were added. Claims 25 to 33 do not add new matter and are supported by the present application, including specification, as originally filed.

Claim 28 depends from claim 23 and is therefore allowable for at least the same reasons as claim 23.

Claim 25 provides for removing a plurality of configurations in response to determining that a maximum allowed runtime of one of those configurations is exceeded. The cited references do not disclose or suggest this feature. Claim 25 and its dependent claims 26 and 27 are therefore allowable.

Claim 29 provides for a first configuration to trigger transmission of an entry from a stack as a call for reconfiguration. The cited references do not disclose or suggest this feature. Claim 29 and its dependent claims 30 and 31 are therefore allowable.

Claim 32 recites features concerning the reading by a second configuration of data elements remaining in a data vector after other data elements of the data vector were read by a prior configuration. The cited references do not disclose or suggest this feature. Claim 32 and its dependent claim 33 are therefore allowable.

IX. Conclusion

In light of the foregoing, it is respectfully submitted that all of the presently pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

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Respectfully submitted,

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